

# THE ANNALS

AND

## MAGAZINE OF NATURAL HISTORY.

[NINTH SERIES.]

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"..... per litora spargite muscum,  
Naiades, et circum vitreos considite fontes;  
Pollice virgineo teneros hic carpite flores:  
Floribus et pictum, divæ, replete canistrum.  
At vos, o Nymphæ Craterides, ite sub undas;  
Ite, recurvato variata corallia trunco  
Vellite muscosis e rupibus, et mihi conchas  
Ferte. Deæ pelagi, et pingui conchylia succo."  
N. Parthenii Giannettasi, Ecl. 1.

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I.—*Notes on some Noctuidæ in the Joicey Collection, with Descriptions of new Species.* By Miss A. E. PROUT, F.E.S.

[Plates I.-VII.]

### INTRODUCTORY NOTE.

In publishing the following notes, I wish gratefully to acknowledge my deep indebtedness to Mr. J. J. Joicey for the opportunities of study he has so kindly afforded me by entrusting to me the responsible task of working out his fine and rapidly-increasing collection of the Noctuidæ of the world. The accompanying paper is the outcome of my studies of the Joicey Collection, and the types will in all cases be found there, unless otherwise specified.

I wish, further, to acknowledge gratefully my indebtedness to Sir George F. Hampson for help and advice given me in my studies at the British Museum, and especially so for the invaluable service he has rendered to all students of the Noctuidæ by his standard work on the family, which has done so much to render the working out of this large and

extremely difficult group less hard for those who come after him. If, in this and in papers I may subsequently publish, the opportunity of studying larger material or some independent light on the subject should lead me to differ from Sir G. Hampson's conclusions, I shall do so always with respectful remembrance of what I owe to his book and to his careful working out of the National Collection, without the aid of which my own work would scarcely have been possible.

I would also tender my thanks to Lord Rothschild, Professor Poulton, and Mr. Bethune-Baker for the loan of types, to Mr. W. H. Tams for assistance given me in my work at the British Museum, and especially to the Rev. C. R. N. Burrows, who in the midst of his busy and strenuous life has so kindly found time to work out the genitalia of various Noctuidæ submitted to him from the Hill Museum. The illustrations on Plates I.-VII. are photographed from drawings prepared by Mr. Burrows.

Finally, I would tender sincerest thanks to my brother, Mr. L. B. Prout, who has revised my manuscript, and who, throughout my studies, has given me help and advice as to the best methods of specialized entomological work, placing his own wide knowledge and experience freely at my service.

#### NOTE ON CLASSIFICATION.

In spite of Sir George Hampson's excellent work, there is evidently much still needing elucidation, both with regard to the classification and the nomenclature of the Noctuidæ; but in the following paper I have followed the system of nomenclature first published in the Cat. Lep. Phal., except in one or two instances.

In Hampson's Phytometriinæ I have used the old familiar name of Plusianæ for the subfamily and *Plusia* for the genus. For the Noctuinæ I have temporarily employed Guenée's Ophiderinæ—though the name is not a satisfactory one, as *Othreis*, Hbn., has priority over *Ophideres*, Boisd. But Noctuinæ is obviously untenable, since, as Aurivillius points out in his paper in Schwed. Kilim. Exped. (9) p. 34 (1910), Hampson's use of the name *Noctua strix* for *Thysania agrippina* is founded on a misconception, due to Linné having erroneously cited to *strix* a figure in Merian's "Insects of Surinam," and having been thereby led to consider *strix* as an American species. Linné's own description of *strix* distinctly mentions that it is "tongueless" and that

the wings are "black, reticulated and clouded"; and in the later fuller description in the "Museum Ludovicæ Ultricæ" he further says "nec alas dentalus nec lingicam observo." In view of these descriptions and of the fact that Linné's type of *strix* is still in the Queen Louisa Ulrica Collection (which never possessed a specimen of *Thysania agrippina*) it seems quite certain that Linné's *Noctua strix* was the common S. Asiatic Cossid, which was figured and described by Clerck as *strix*, L. Therefore (as Aurivillius concluded his remarks by pointing out), "anyone who is of opinion that the first species is to be considered typical would have in consequence to consider the Cossids as the true Noctuids"! The name *Erebinae* (employed by Barnes and McDunnough in their 'Check-List of the N. American Lepidoptera') seems also, unfortunately, to be untenable, as Latreille appears to cite *crepuscularis*, L., as his type of *Erebus*, and *odora*, L., only as an additional species; this necessitates the transfer of the name *Erebus* to the Catocaline genus *Nyctipao* (see Cat. Lep. Phal. xiii. p. 331), *odora* becoming (according to Hampson) *Otosema odora*. It seems necessary, therefore, to select some other subfamily name, and, in the meantime, I have chosen *Ophiderinae*.

My other point of difference from Sir George Hampson opens up a wider question than one of mere nomenclature. It is with regard to the classification of the subfamilies *Catocalinae* and *Ophiderinae*.

The Rev. C. R. N. Burrows has called my attention to the wide divergence between the genitalia of the genus *Catocala* and immediately allied genera and those of *Acanthodica*, *Erebus* (*Nyctipao*), *Speiredonia*, *Ercheia*, and others of the later Catocaline genera submitted to him, the latter all having very large coremata (entirely wanting in true *Catocala*). Mr. Burrows strongly urges that these two groups should be separated, and, in view of the very distinct early stages of *Catocala* (mentioned by American authors, who have no doubt had opportunities of comparison with the early stages of some of the exotic species of Hampson's *Catocalinae*), as well as the difference of genitalia, it seems very probable that the *Catocala* group of species will ultimately be found to form a distinct subfamily, although I have not as yet been able to discover any structural point, apart from the genitalia, which will form a good key-distinction for the subfamily. I shall be grateful for any information which may help to throw light on this interesting question.

A further question arises with regard to the separation of certain apparently closely-allied species. In Cat. Lep. Phal.

xii. p. 2, Hampson mentions the fact that many of the Catocaline genera have close relatives in his Noctuinæ, suggesting a common origin between the two subfamilies; but he does not emphasize the point. In working through these two subfamilies, however, I have been so constantly struck by the close resemblance between genera in the two that I have begun to doubt whether the spinous mid-tibia can be a subfamily character at all.

With a view to elucidating this point, specimens of *Cocytodes maura*, Holl. (Pl. VI. fig. 3), *Cocytodes carulea*, Gn. (Pl. VI. fig. 2) (Catocalinæ), and *Arcte papuensis*, Warr. (Pl. VI. fig. 1) ("Noctuinæ"), have been submitted to the Rev. C. R. N. Burrows for dissection; also specimens of *Achea ablunaris*, Gn. (Pl. VI. fig. 4) (Catocalinæ), and *Mimophisma delunaris*, Gn. (Pl. VII. fig. 1) ("Noctuinæ"). With regard to the *Cocytodes* and *Arcte* species Mr. Burrows writes:—"3 & 4 (*C. carulea* and *A. papuensis*, are more close than 2 (*C. maura*) to either." Of *A. ablunaris* (comparing it with *M. delunaris*) he writes, "Is a distinct species, but I think undoubtedly belongs to the same 'genus,' so far as we understand anything by the term genus. It is indeed a close 'brother,' with all the features the same, but different in form and development."

In view of these conclusions, and of the strong resemblance between many other species which are divided by Hampson's use of the spinous mid-tibia as a subfamily character, it seems not improbable that this character will ultimately have to be discarded, and some other classification of these large and very heterogeneous groups adopted in its stead, especially in view of the following points:—

(1) In some species only one or two spines seem to be present—a form intermediate between true Catocalinæ and "Noctuinæ."

(2) In other species the spines are only visible in the ♀ (though possibly concealed in the ♂).

(3) In several of the subfamilies the fore and hind tibiæ are sometimes spined, sometimes non-spined; there seems no logical reason why the mid-tibia should be of more subfamily value than fore or hind tibia—especially considering that, in the Trifids, it is the hind tibia that is taken to characterize a subfamily (the Agrotinæ), so that there is no correspondence between the two groups. It is certainly rare for the hind tibia to be spined and the mid-tibia unspined (suggesting that the natural order of development is for the spines to appear first on the mid-tibia); but this is by no means a universal rule, for there are genera both in the

Agrotinæ and the Plusianæ which have the hind tibia spined and the mid-tibia non-spined.

*ERASTRIANÆ.*

1. *Lophoruzza rubrimacula*, sp. n. (Pl. I. fig. 1.)

♂.—24 mm.

Head and thorax above pinkish white with some brown scales intermingled (chiefly on head and tegulæ); body beneath and legs whitish; dorsum of abdomen with the basal and anal segments pinkish white, the medial segments brown, mixed with black.

Fore wing with the costal half, from apex to hind margin at nearly one-third, pinkish-white with the costa tinged with tawny brown; the rest of the wing pale tawny-brown, somewhat darker where it meets the pale shade, the termen distinctly darkened from apex to behind  $R^3$ ; a tawny streak at base of wing, extending across metathorax; some brown shading in middle of cell; antemedial, medial, and post-medial lines just visible as pale, dark-outlined, outwardly oblique streaks on the costal tawny shade, the two former becoming obsolescent behind SC, the latter indistinctly continued as a punctiform dark line, excurved round cell, then incurved to inner margin at about two-thirds; a fine white subterminal line, expanding to a conspicuous white spot on  $R^2$ , behind which it is angled outward, with some proximal black dots anteriorly; a rufous proximal patch between the radials, and three ochreous spots (one proximal and two distal) between  $SC^5$  and  $R^1$ ; a row of black marginal spots and a fine dark marginal line; fringe pale tawny-brown chequered with blackish-brown.

Hind wing with the base pinkish-white, the rest of the wing pale tawny-brown, almost whitish about the subterminal area; a slight, dark, waved postmedial line; a small subterminal rufous spot behind  $M^1$  and a large one from  $M^2$  to near abdominal margin, with a small brown one behind it; marginal spots and line and fringe as on fore wing.

Wings beneath whitish tinged with tawny-brown, with slight curved crenulate postmedial and subterminal lines; margins as above, but less sharply marked; discal spots very slight.

♀.—26 mm. Marked as in the ♂, but with the pinkish and tawny shades both a trifle brighter.

Upper Tonkin: Muong-Khuong, Prov. Laokay, 900-1000 m., type and 1 ♀.

Nearest to *albicostalis*, Leech., from Central China, from

which it differs in the darker subapical shade on fore wing, the rather larger and darker subtornal spot behind  $M^2$  on the hind wing, the rather darker shade on the costa of fore wing, and, especially, in the brown streak across metathorax and base of fore wing (which is not present in any specimen of *albicostalis* that I have seen). Possibly only a subspecies.

2. *Lithacodia picatina*, sp. n. (Pl. I. fig. 2.)

♂.—22 mm.

This species has hitherto been mixed with *picata*, Btlr., in the British Museum and evidently also at Tring, for it is figured in Seitz (Macro-Lep. vol. xi. pl. xxvi. a) as *picata*. The two species are quite clearly distinguishable by the triangular dark patch on base of costa in *picata* being replaced in *picatina* by a golden-brown streak along the costa; by the antemedial line being only slightly crenulate in *picatina*, not angled at the folds as in *picata*; by the absence in *picatina* of the postmedial dark point on costa and the black point at upper angle of cell, the black spot at lower angle of cell being also reduced in size; by the subterminal line being almost obsolete in *picatina*; and (perhaps the most constant distinction of all) by the shape of the white mark on distal margin, from  $SC^1$  to  $R^3$ , which forms a narrow patch in *picatina*, quite separate from the other white markings, but in *picata* is less sharply marked and is always connected by a white bar between  $R^1$  and  $R^2$  with the white postmedial and tornal areas. Fringe of fore wing in *picatina* whitish-brown, tipped with grey. In other respects exactly agrees with Hampson's description of *picata*, Cat. Lep. Phal. x. p. 503.

Khasia Hills, Assam (*Nissary*), type and 5 other ♂♂.

In British Museum from Sikkim and one specimen from Sabathu.

*EUTELINÆ.*

3. *Eutelia regalis*, sp. n. (Pl. I. fig. 3.)

♂.—27 mm.

This species belongs to the section of the genus called *Eleale* (Sect. 1, B, c, of Hampson); its nearest allies being *subripicta*, Hampson., and *plusioites*, Wlk.

Head and thorax above bright red-orange, the tegulae a little darker; palpi, pectus, and legs ochreous-brown, the tarsi ringed with white; abdomen ochreous-brown, with the dorsal crests red-orange.

Fore wing with the basal third and a large postmedial costal patch ochreous, thickly irrorated with red-orange; the rest of the wing white, closely irrorated with grey-violet; lines indistinct; antemedial, medial, and postmedial white spots on costa; indistinct, blackish, sinuous antemedial, medial, and postmedial lines, all angled outward before middle, then somewhat incurved to hind margin; an indistinct maculate subterminal line, following the curve of the postmedial; a white streak from costa near apex to termen about R', and a curved white streak from M' near termen to tornus, the two being connected by slight white spots; fringe grey-brown.

Hind wing pale ochreous, the distal half grey-violet narrowing to apex and tornus; a white dash from M' to termen near tornus, and a white spot on abdominal margin just proximally to tornus; fringe grey-violet with a fine pale line at base.

Underside of fore wing violet-grey, posteriorly pale ochreous; slight dark cell-spot and double curved postmedial line; the white terminal line of the upper surface showing near apex and on hind-marginal half of wing. Hind wing as above, with the addition of a dark cell-spot, with some violet suffusion above it, and a slight postmedial line.

Amboina, type only.

Can be easily distinguished from both *fulvipicta* and *plusioides* by the deeper tone of colour, the broader border to the hind wing, the absence of the diffused black streak in the basal half of cell, etc.

#### STICTOPTERINÆ.

##### 4. *Stictoptera plumbeotincta*, sp. n. (Pl. I. fig. 4.)

♀.—36 mm.

Head and thorax leaden-violet, mixed with some ochreous scales; palpus and antennal shaft ochreous shaded with leaden-violet; dorsum of abdomen grey-brown, with the basal crests a little redder; body beneath pale ochreous; legs pale ochreous shaded with violet.

Fore wing pale ochreous, largely suffused with leaden-violet, especially on the basal area to medial line and on apical area, leaving a subtriangular patch of the ground-colour on distal part of hind margin; sub-basal and antemedial lines almost obsolete, the latter purplish-grey, undulating, starting close to medial line, then incurved, strongly ex-curved before hind margin; medial line black, with some

proximal dark shading in and behind cell, oblique and slightly crenulate from two-fifths costa to two-thirds hind margin; reniform leaden-grey, with faint pale outline, narrowing towards costa; an indistinct fine crenulate dark line nearly parallel with the median line, but approaching it at hind margin; postmedial line a grey dash on costa, then a row of indigo spots between the veins, angled out on  $SC^5$ , excurved to fold, and angled out on  $SM^2$ ; an undulating pale subterminal line from costa near apex to tornus, with three black proximal darts behind costa,  $SC^3$ , and  $SC^4$ , the last the largest, proximally darkened from  $M^1$  to tornus; a row of pale-edged black marginal spots between the veins; fringe grey, with pale streaks at the veins.

Hind wing with basal area hyaline, smoky brown along hind margin, with the distal two-fifths and a lunule on  $DC^2$  and  $DC^3$  dark grey; fringe pale brown, shaded with grey between the veins.

Underside of fore wing smoky-grey, with some peacock-green reflections on basal half of hind-marginal area and a pale patch between the origin of  $M^1$  and  $M^2$ ; five or six pale spots on apical half of costa, with black spots between them; slight, dark medial, postmedial, and subterminal lines, as above. Hind wing as above, with the costal area slightly smoky and an oblique black streak from costa to the lunule on discocellulars.

Rossel Is.; Mt. Rossel, 2100 ft., Dec. 1915 (*W. F. Eichhorn*), type and another ♀.

#### *SARROTHRIPINÆ.*

##### 5. *Blenina brevicosta*, sp. n. (Pl. I. fig. 5.)

♀.—38 mm.

Head and thorax white, thickly irrorated with green above and with a few brown scales; patagia with some black scales near middle. Palpus and legs white, marked with brown and black. Abdomen yellow above and beneath, with the anus browner; the crests greenish.

Fore wing white, irrorated with green scales on the basal half of wing and the postmedial area, with violet-brown on the medial area—where it forms a sort of band—and on the apical half of distal area; a few brown scales on the costal half of subbasal area and some yellow hair at base of hind margin. Subbasal line slight, blackish, curved to about median nervure; a black antemedial half-line from costa, angled outward to the subcostal and again above median;



a black spot obliquely beyond it, near hind margin; median line obliquely sinuous from two-fifths costa to half hind margin, angled outward behind  $M^2$ , a small black spot distally to it in cell and an upright blackish streak in place of the reniform; postmedial line obliquely sinuous from half costa to close to tornus, indistinct, upright at costa, strongly angled outward at  $R^1$  and before hind margin and inward at  $R^2$  behind  $M^1$ ; subterminal line strongly dentate, nearly parallel with margin to about  $R^3$ , upon which and on  $M^1$  it is angled out to nearer the distal margin, which it joins at  $SM^2$ ; broad terminal black spots on the veins; fringe white, with black streaks between the veins and slight brown tips.

Hind wing yellow, coloured about as in *B. donans*, Wlk., but with the dark border extended along costa, ending close to  $M^2$ , shading gradually into the ground-colour and extending across the fringe; tornal one-third of fringe yellow; veins slightly darkened.

Underside of fore wing brown; costa from near base white with some brown marks on it, the white broadening to a patch from about half to three-quarters along costa; fringe white chequered with blackish, as above. Hind wing as above, but with a reddish tinge on costal area.

Sierra Leone, type only.

This specimen appears to belong to the genus *Blenina*, but the fore wing is a trifle narrowed at the apical part of costa, the hind wing unusually narrow and almost without the marginal indentation behind  $M^1$  which is so characteristic of the majority of *Blenina* species. The origin of  $M^2$  on the hind wing is removed further from  $M^1$  than in any other *Blenina* species known to me, unless it be *B. quadripuncta*, Hmps. (type in Coll. Joicey), the neuration of which is not quite normal.

#### 6. *Risoba obliqua*, sp. n. (Pl. I. fig. 6.)

♂.—40 mm.

Head green, tegulæ banded with brown (next the head), green, and white. Thorax white mixed with brown scales, the crest green. Pectus and hair on femora and tibiæ pale brown, tinged in parts with greenish; tarsi brown with pale rings at the joints. Abdomen above greenish, variegated, the crests dark brown; beneath dark brown, except basally.

Fore wing white, irrorated with green, especially on the apical costal area, and with thick dark brown irroration, forming a very oblique band outside the antemedial line and

on oblique bar from apex and with some paler brown shading on the basal and terminal areas; nine dark points on the costa, the 2nd, 4th, 6th, and 8th representing the origin of the four principal lines. A short black streak on base of median vein, almost joining the antemedial line, which is obsolescent between the costal dark spot and M, then black, outwardly oblique and waved to hind margin; median line represented by an inwardly oblique bar from costa to SC and two oblique spots to M, where it is angled outward and becomes lost in the dark clouding; a pale ochreous patch behind base of M<sup>2</sup>; reniform defined by a slightly oblique and elongate black ring; postmedial line double and filled in with white at the costa, lost on SC, behind which it is resumed about 3 mm. nearer the distal margin, the inner line being thick and black, the outer chiefly defined by white teeth on the veins, nearly parallel with termen, but angled inward in the cell and outward on SM<sup>2</sup> and to hind margin; subterminal line black, sinuous, slightly edged with whitish on the distal side, from R<sup>2</sup> onwards nearer termen and more strongly waved; termen spotted with black between the veins and with a fine, sinuous, black terminal line; fringe white, chequered with black between the veins.

Hind wing white, with a diffused dark cell-spot, dark suffusion on the costal area, some reddish hair towards the abdominal margin and a broad blackish border, occupying somewhat more than one-third of the wing on apical half and less than one-third towards termen; a black terminal line with a fine white line proximally to it, from below apex to fold; fringe dark, with a fine white line at base.

Underside of fore wing white, with some dark suffusion on costa, a dark cell-spot and the area distally to the postmedial line brown, excepting a pale patch behind apex; terminal markings and fringe as above. Hind wing as above, but with the costal area paler and the cell-spot more strongly defined.

Bidi, Sarawak, 1907-1908 (*C. J. Brooks*), 1 ♂.

A ♀ from Mindanao, Philippines (*I. I. Munsay*), may probably belong to the same species, but is very likely an aberration or local race. It differs in the slightly larger size (45 mm.), in the yellower tone of ground-colour on both wings and both surfaces, in the oblique antemedial band extending to costa, in the absence of dark suffusion distally to the postmedial line, in the dark bar from apex being much lighter, and in the veins being defined by black streaks towards termen. On the underside of the fore

wing the cell-spot is partly joined to the black terminal area. Pending fuller knowledge, I propose to call this form *R. obliqua philippinensis* (Pl. I. fig. 7).

7. *Risoba owgarra*, sp. n. (Pl. I. figs. 8 ♂, 9 ♀.)

= *Risoba cebea*, Hampson, Cat. Lep. Phal. xi. p. 435 (1912) (part.), nec *cebea*, Bethune-Baker, Nov. Zool. vol. xiii. p. 233 (1906) (Mt. Kebea).

This species differs in the ♂ from *cebea*, B.-Baker, with which it has hitherto been confused, in the longer palpus ( $1\frac{1}{2}$  diameter of eye in *cebea*, twice diameter of eye in *owgarra*); in the rather smaller size (36 mm. in *owgarra*, 40 mm. in *cebea*); in the broad white subcostal area along SC-SC<sup>1</sup> nearly to apex (in *cebea* the antemedial green and brown shading extends broadly to middle of wing from costa to hind margin); in the absence of the white tooth between the apical dark patch and the dark mark behind SC<sup>5</sup> (which in *owgarra* is merely a diffused purple-grey shade); in the reduced and more oblique basal white shade, which in *owgarra* starts from the base of SC (with narrow white line before it from base of costa) and is crenulate to about two-fifths hind margin, while in *cebea* it starts from costa and is almost straight to two-fifths hind margin; the white band proximally to postmedial line is less straight and regular in *owgarra* than in *cebea*, the postmedial line rather more curved and less dentate; the white marginal lunule behind M<sup>2</sup> is much smaller in *owgarra* than in *cebea*. Hind wing with the dark bordering reduced and almost without the black postmedial spots on veins.

In the ♀ there is a similar difference in size (36-38 mm. in *owgarra*, 44 mm. in *cebea*); the white basal patch is reduced and has the edge crenulate, as in the ♂, the type ♀ of *cebea* being without any dark shading on the white patch, whilst all ♀♀ of *owgarra* yet studied have all but a narrow line at distal edge shaded with green marked with brown; the pale postmedial costal patch extends to a point on M<sup>2</sup> in *owgarra* (in *cebea* it is intercepted by a violet shade on R<sup>3</sup>); the difference in the apical patch is as in the ♂, but the dark mark behind SC<sup>5</sup> is enlarged and very black in the ♀ of *cebea*; in *cebea* ♀ the postmedial line is inwardly oblique from R<sup>3</sup> to hind margin about  $2\frac{1}{2}$  mm. from antemedial line, in *owgarra* the two lines are about 5 mm. apart on hind margin.

The description of *cebea* (in Cat. Lep. Phal. xi.) seems to embrace some of the salient points of each species, the ♀ in

Brit. Mus. from Dinawa belonging to *kebea*, that from Ougarra to *owgarra*. The figure is of *kebea*.

I am indebted to Mr. Bethune-Baker for his kindness in lending me the ♂ and ♀ types of *kebea* for study.

Brit. New Guinea: Ougarra (*A. S. Meek*), 1 ♂, 3 ♀ ♀.

#### ACONTIANÆ.

##### 8. *Hylophilodes pseudorientalis*, sp. n. (Pl. I. fig. 10.)

= *Hylophilodes orientalis* ♂, Hmps. Cat. Lep. Phal. xi. p. 510 (fig.) (1912) (nec *Haliis orientalis*, Hmps. Moths Ind. ii. p. 132 (1894) (Naga Hills)).

Owing to the lack of sufficient material, Hampson has confused two species under the name of *orientalis*, Hmps., supposing them to be a dimorphic ♂ and ♀. Having access to better material, Warren discovered the existence of a second species, but, by a curious oversight, he re-named the true *orientalis* as *Hylophilodes parallela* [Nov. Zool. xxiii. 222 (1916) (Assam)], leaving the species with the red fringes and oblique postmedial line still without a name. By the kindness of Lord Rothschild, I have been permitted to study and compare the types of *orientalis* and *parallela*, which undoubtedly both belong to the species described by Hampson in Moths Ind. For the other species I propose the name of *pseudorientalis*.

Described and figured (in Cat. Lep. Phal. xi.) as *Hylophilodes orientalis* ♂.

Underside of both wings whitish, the fore wing tinged with green, especially on the costal third, and with slight black irroration just behind the costal rufous line, which is broader than above.

♀.—Differs only in the absence of the rough yellow hair on dorsum of abdomen (which in the ♂ extends almost to anus) and in the yellow tuft on abdominal margin of hind wing being reduced to a slight fringe along SM<sup>3</sup>.

Khasis (Nat. Coll.), type and a ♀; Khasia Hills (*Nissary*), 1 ♂, 2 ♀ ♀; Cherra Ponji, 1 ♀; Burmah, 1 ♂.

*Pseudorientalis* can be at once distinguished from *orientalis*, Hmps. (= *parallela*, Warr.), by the oblique postmedial line, the rufous costa and fringes, and the thick yellow hair on dorsum of abdomen and abdominal margin of hind wing, as well as by the rather larger size (36–38 mm. as against 30–35 mm.) and the deeper green, less hyaline fore wing and rather less hyaline hind wing.

9. *Carea leucozona*, sp. n. (Pl. I. fig. 11.)

♀.—28 mm.

Head and palpus red-brown; thorax above red-brown with some white scales; tegulæ white at middle. Pectus and legs creamy-white, tinged with red-brown; fore legs predominantly red-brown. Abdomen grey above, whitish irrorated with red-brown beneath.

Fore wing white, thickly irrorated with red-brown except for a broad white medial band and five white antemedial, postmedial, and subterminal lines, the last-named tinged with violet; slight black irroration in parts; a slight black spot on the white medial band and a black reniform streak on distal edge of it. Antemedial line nearly upright, waved, close beside and almost parallel with the medial band; postmedial slightly black-edged proximally, starting near medial band, excurved from about  $SC^2$ , angled in on  $R^2$ , and curved inward between  $M^2$  and  $SM^2$ ; subterminal line near termen, following almost the same curves as the postmedial, the proximal black shading heavier; black marginal streaks between the veins; fringe ochreous shaded with reddish, white at tornus and at the tips.

Hind wing nearly uniform grey, with the fringe as on the fore wing, but without the white at tornus; fringe of abdominal margin grey; a slight cell-spot shining through from beneath.

Underside of fore wing grey, the costal margin broadly reddish; fringe as above. Hind wing with strong dark cell-spot; some reddish irroration on the distal half, especially towards costa; proximal half of wing paler.

Bidi, Sarawak, 1907-1908 (*C. J. Brooks*), type only.

Slightly recalls *C. revilla*, Swinh., but has rather a shorter and broader fore wing and is abundantly distinct in markings.

10. *Maceda mansueta rufimacula*, subsp. n. (Pl. I. fig. 12.)

♀.—33-36 mm.

Head, thorax, abdomen, and legs not distinguishable from *M. mansueta*, Wlk.

Fore wing predominantly violet-grey, with the basal area (especially on costal half) and a fairly large subapical patch rufous—the latter crossed by a brown subterminal line. A broad diffused antemedial shade, angled outward from just behind  $M$  to two-fifths hind margin; medial area uniform violet-grey, with a minute black dot on the middle

of the discocellulars; a broad diffused postmedial shade, less strongly angled inward before and behind  $M^2$  than in the majority of *mansueta mansueta* and hardly noticeably dentate; the terminal area darker than medial area, with some rufous scales intermingled, especially near the postmedial line; subterminal line almost obsolete, except on the subapical patch; fringe brown, with a slight pale line at base.

Hind wing much as in *mansueta mansueta*, but more predominantly smoky; the termen and fringe white between and just beyond  $M^1$  and  $M^2$ , the fringe tipped with white from  $R^1$  to near tornus.

Underside of fore wing as in *mansueta mansueta*; hind wing with the spot on discocellulars larger and darker than usual, the dark bordering extended to near base of wing on costa and narrowed off to a point at tornus, instead of ending about  $M^2$ .

Goodenough Island, 2500–4000 ft., April 1913 (*A. S. Meek*), type and four other ♀♀.

This may be a distinct species, all five specimens being extremely uniform and unlike any *mansueta* specimens from other localities; but in the absence of the ♂ and of any discoverable structural differences, I have regarded it as a subspecies of the extremely variable *mansueta*.

#### CATOCALINÆ.

##### 11. *Agonista endochrysa* Prout. (Pl. II. figs. 1 ♂, 2 ♀.)

♀.—98 mm.

Head, thorax, pectus, legs, and abdomen as in ♂, save that the black shades of the ♂ are paler and browner in the ♀.

Fore wing reddish-brown;  $DC^2$  and  $DC^3$  slightly darkened; a slight yellowish dash outside the discocellulars, with proximal dark shading; medial line diffused, dark reddish-brown, very upright; postmedial line greyer, very diffused, distally pale-edged, starting at two-thirds costa, angled out behind  $SC^5$ , then nearly straight to hind-margin; subterminal line represented by a series of yellowish-white, distally black-edged points between the veins, those between  $R^1$  and  $SM^2$  being most distinct; fringe ochreous, largely shaded with black-brown.

Hind wing reddish-brown; medial line as on fore wing; postmedial with more distinct yellow shade beyond it, very slightly bent anteriorly, then very straight to near abdominal

margin, where it is lost in the yellow area, which is as in the ♂; tornal half of distal margin yellow, sparsely irrorated with brown; fringes brown from apex to about  $R^3$ , then yellow.

Underside of fore wing red-brown, with the postmedial line as above, but with distinct yellow line outside it; a row of yellow spots between the veins close to termen. Hind wing with a dark spot ringed by yellow round  $DC^2$  and  $DC^3$ , the discocellulars themselves pale yellowish; postmedial line and yellow terminal spots as on fore wing; the yellow shade of abdominal margin extended to beyond  $M^2$  except at base, with scattered brown vertical dashes.

North Borneo, one ♀. Also ♀ from Labuan, in imperfect condition, which seems to have the yellow areas on hind wing a little reduced.

The ♂ of this species was described in Ann. & Mag. Nat. Hist. (9) iii. p. 169 (1919), from Sandakan, N. Borneo.

12. *Achæa ochrocraspeda*, sp. n.

(Pl. II. fig. 3, ♂; Pl. III. fig. 1, ♀.)

♂.—76 mm.

Head, thorax, palpus, antenna, abdomen, and legs brown; the pectus, femora, and tibiæ (especially the hind tibia) clothed with long, woolly, brown hair.

Fore wing rich glossy brown, slightly shot with violet on the medial area, especially on the antemedial and postmedial lines, the former of which is dark brown, almost straight, from costa at 12 mm. to hind margin at 11 mm.; faint traces of darkening on  $DC^2$  and  $DC^3$  and of one or two curved medial shades; postmedial line brown with a white line outside it, starting from costa at 21 mm., outwardly oblique to  $R^2$  where it is gently curved inward, then almost straight to hind margin at 18 mm.; fringe yellowish-white, having some brown shading from  $M^1$  to  $M^2$ , then dark brown.

Hind wing rich glossy brown, the basal one-third clothed with rough thick hair; a pale curved line, just distally to middle of wing, and traces of a dotted outer line midway to termen; a small yellowish-white apical patch; fringe yellowish-white to  $M^2$ .

Underside of both wings brown with distal area paler; a dark spot on the discocellulars; a faint medial dark shade; a dentate, slightly curved postmedial line at nearly two-thirds; a broad, slightly purplish, diffused subterminal shade with somewhat crenulate outer edge, meeting dark shade from apex and tornus on fore wing; a row of minute

dots close to termen; hind wing with a slight, diffused, crenulate line nearer termen; fringe as above, but with the pale parts greyer.

S. Sudan: Tamlio, Bahr-el-Ghazal, one ♂.

A ♀ from Cameroons—Bitje, early May and June, wet season (*G. L. Bates*)—appears to be the ♀ of this species, but differs in the spot on  $DC^2$  and  $DC^3$  of fore wing forming a narrow ring, in the more distinct medial line on upper side of fore wing and underside of both wings, and especially in the shape of postmedial line of fore wing above, which is oblique as far as  $R^3$  and distinctly incurved posteriorly.

Near to *A. cymatius*, Prout, and *A. hypoxantha*, Hmps., but appears to be quite a distinct species.

### 13. *Achæa joiceyi*, sp. n. (Pl. III. fig. 2.)

♀.—52 mm.

Head, thorax, and palpus white marked with fuscous; the palpus with a dark dash on the outer side of each joint, tegulæ with some dark scales at base and tips, patagia and thorax with three irregular dark bands; abdomen above yellow; abdomen beneath and legs whitish, the tarsi broadly banded with fuscous; antennal shaft brown.

Fore wing white, with fuscous markings; some yellow hair behind fold at base; a dark spot at base; subbasal line represented by two broad dark bars at costa (the inner one reaching M), and a large spot behind celi; antemedial line represented by four large spots and a small one (before inner margin) on proximal side and a slightly broken line on distal side, nearly erect and angled out at fold; orbicular a small ring; reniform with dark centre and defined by a dark line, oblong, erect; a double dentate medial line from costa at middle to hind margin at middle, making a broad curve from costa to  $M^2$ , with sharp teeth, usually on the veins, and with a sharp proximal tooth cutting into the middle of the reniform; a double dentate postmedial line, following the curves of the medial, but with the lines finer, less diffused; some proximal dark shading (broadest behind costa) and a fine, dentate, distal line defining the subterminal; some black shading at termen between  $SC^5$  and  $R^3$ ; some terminal spots between the veins; a fine marginal line; fringe white chequered with fuscous.

Hind wing yellow with the discal border fuscous (narrowing and becoming broken on tornal half and interrupted by



yellow at apex); margin and fringe as on fore wing; the basal hair golden-yellow.

Underside of both wings whitish irrorated with fuscous, the inner margin yellow (narrowly on fore wing, broadly on hind wing). Fore wing with diffused discal spot with spots above it at costa, a curved postmedial line, some diffused dark subterminal shading, and a row of terminal dots. Hind wing with discal dot, indistinct medial and postmedial lines (the former double) and double subterminal shading; a row of terminal dots.

Ivory Coast, 1 ♀.

This seems to be an *Achæa* species, though the under surface more resembles *Heliophisma*, which differs from *Achæa* chiefly in the more produced apex of fore wing.

*Achæa indistincta*, Wlk.

Mr. L. B. Prout, in his paper published in *Ann. & Mag. Nat. Hist.* (9) iii. p. 184 (1919), notes the fact that this species (the type of which is in Coll. Joicey) is distinct from *Achæa ablunaris*, Gn., to which Hampson sinks it (*Cat. Lep. Phal.* xii. p. 538). It was then overlooked that *indistincta*, Wlk., is really a synonym of *Mimophisma delunaris*, Gn., which Hampson places in the Noctuinæ. For the close relationship between these two species, see the preceding note on classification.

14. *Parallelia diffusa*, sp. n. (Pl. III. fig. 3.)

♂.—38 mm.

Head, thorax, palpus, antenna, abdomen, and legs nearly unicolorous brown, the tarsi paler and a little more ochreous in tone.

Fore wing glossy purple-brown, the basal area a little more lead-coloured, the outer medial area metallic greenish-brown, the ante- and postmedial lines dark red-brown, distally edged with flesh-colour, the oblique apical streak dark brown, proximally diffused and shading into violet. Antemedial line nearly erect, from costa at 5 mm. to hind margin at 6 mm.; a slightly incurved, diffused inner edge to the medial dark shade representing the medial line; postmedial line oblique outward from costa at 11 mm. to  $R^1$ ; here acutely angled, thence nearly straight to hind margin at 10 mm.; five white spots on costa towards apex, the 1st marking the origin of the postmedial line, the 5th the origin of the

subterminal, which is faintly visible as a pale streak on costal half of the apical dark patch, then represented by pale dashes on the veins; fringe purple-brown, paler between  $M^2$  and tornus.

Hind wing nearly uniform grey-brown, with a pale terminal line, a pale subterminal dash from about  $M^2$  to tornus and the fringe paler from behind  $SC^2$  to  $R^2$  and from  $M^2$  to tornus and outer one-fourth of abdominal margin; fringe with a pale central line.

Underside of both wings grey-brown, the distal third tinged with chocolate-brown. Fore wing with five white spots on apical part of costa, a dark, distally pale-edged postmedial line, almost obsolete behind  $R^2$ , an indistinct, dentate, pale subterminal line and bluish-white shading on distal margin and basal half of fringe, especially on apical half of wing. Hind wing with faint, pale postmedial and subterminal lines and bluish-white shading on termen and fringe from behind  $SC^5$  to tornus.

♀.—40 mm. Differs only in the slightly larger size.

Cameroons: Bitje, Ja River, early May and June, wet season (*G. L. Bates*), ♂ and 1 ♀; also a ♂ dated 1915.

This species is extremely near to *P. conjunctura*, Wlk., from Sierra Leone, but the distal margin of the fore wing is distinctly more rounded, the under surface is more sharply marked, the general tone of the fore wing is somewhat more leaden, and *conjunctura* has the inner half of the medial area of fore wing pale, the outer half bordered by a strongly curved, distinct line, instead of the two areas almost shading into each other, as in *diffusa*. The Rev. C. R. N. Burrows, who has examined the genitalia of the two species, writes: "I consider (these) distinct species. The difference in detail is very marked indeed, although in general form the suggestion is close affinity. The (? *furca*) is quite different. So is the costal arm." The genitalia are figured on Pl. VII.: *P. conjunctura*, fig. 2; *P. diffusa*, fig. 3. Pl. VII. figs. 4, 5 represent *P. humilis* and *isotima* [see *Ann. & Mag. Nat. Hist.* (9) iii. p. 185 (1919)].

#### 15. *Attatha barlowi*, sp. n. (Pl. III. fig. 4.)

♂.—42 mm.

Head, thorax, and palpus fleshy white; frons black; tegulae and mesothorax black; dorsum of abdomen yellow, ventral surface pale yellow; femora and hind tibiae cream-coloured, fore- and mid-tibiae pink, tarsi grey-brown ringed with white.

Fore wing pale flesh-colour; costal edge black towards base; a wedge-shaped black mark behind the cell; a narrow black fascia along hind margin from near base to just beyond middle; an outwardly oblique, triangular black patch just proximally to middle, its distal edge angled outward across DC<sup>4</sup> and its extremity produced in a narrow streak to fold near termen; carmine streaks on M<sup>1</sup> and M<sup>2</sup> distally to the dark patch; a black subtornal spot, distally edged with cerise-pink; a triangular black patch from costa at apex to near termen behind M<sup>1</sup>, with a slight, fine line proximally to it; black spots on termen at M<sup>1</sup> and M<sup>2</sup> and a black spot on the fringe between them.

Hind wing reddish-ochreous, paler towards costa, with a wedge-shaped black mark from apex to R<sup>3</sup>, small black spots near termen before and behind M<sup>1</sup> and at fold, and on termen at M<sup>1</sup> and M<sup>2</sup>; veins slightly redder.

Underside of both wings ochreous-yellow; the fore wing with the irregular medial patch faintly visible and with the terminal black patch present, but less deep and glossy than above, ending at M<sup>1</sup>, with black spots on fringe behind M<sup>1</sup> and at fold; hind wing with the terminal black mark ending behind R<sup>1</sup>, without black spots behind it.

Zomba Plateau, October 1919 (*H. Barlow*).

#### 16. *Safia mollis*, Moschl.

A ♂ of this species in Coll. Joicey, from Caparo, W. Coast of Trinidad (*F. Birch*), proves it to belong to Sect. i. of Hampson, not Sect. ii., where it is placed in Cat. Lep. Phal. xiii. p. 189. The ♂ does not appear to differ from the ♀ except in the presence of the androconia on the under surface and in the much more elongate apex of the fore wing.

#### 17. *Safia hyalina*, sp. n. (Pl. III. fig. 5.)

♂.—50 mm.

Head, palpus, thorax, and legs black-brown irrorated with white, the thorax with a few golden scales, especially on the metathoracic crest, the tarsi white at tips of segments, mid-tibial tuft of hair paler brown. Abdomen grey-brown, with yellowish-white band on 2nd segment and spot on 3rd (a little more extended than in *S. mollis*, to which species *hyalina* seems nearest).

Fore wing semihyaline white with an ochreous tinge and some brown irroration; a few violet scales on basal one-third of wing. A black-ringed white spot behind M at base; 9 dark spots along costa, the 3rd, 5th, and 7th broad,

the 8th moderate, the 9th moderate and interrupted by a minute white spot, the 2nd, 4th, 6th, 8th, and outer section of 9th forming the origin of the five lines, which are brown, irregularly waved, and dentate, more or less upright, obsolescent in parts, the medial and subterminal being most distinct, the former only a little sinuous, the latter strongly waved and dentate, with sharp distal angles behind SC<sup>5</sup> and R<sup>3</sup> and proximal ones on R<sup>2</sup> and M<sup>2</sup>; faint traces of one or two other sinuous lines and of an upright lunular reniform; a row of black spots between the veins close to termen; a dark terminal line; fringe (worn) mixed grey-brown and whitish.

Hind wing with glossy brown hair from base to near termen on costal and abdominal areas in fold; marked much as in *S. mollis* (with minute white cell-spot, waved medial, postmedial, and subterminal lines, black spots between the veins near termen, black terminal line, and slight clouding between the lines); but the subterminal is a little blacker and further removed from termen and the black marginal spots are more detached in *hyalina* than in *mollis*.

Underside of both wings clothed with silky androconia, with indistinct diffused antemedial and medial lines and shadowy traces of the postmedial; costa of fore wing with 5 or 6 whitish spots on apical half, 3 fairly large.

S.E. Peru: Santo Domingo, 6000 ft., xi. 1904 (*G. Ocken-don*), 1 ♂.

Easily distinguished from *S. mollis* by the larger size (30 mm. in *hyalina*, 42-46 mm. in *mollis*), the slightly more hyaline texture of wings, and the darker, broader black markings on fore wing, especially at costa, near base, and on posterior part of medial line; by the more upright reniform and more waved subterminal line, as well as by the points already mentioned on the hind wing.

#### 18. *Zale plumbimargo*, sp. n. (Pl. III. fig. 6).

♀.—60 mm.

Head, palpus, antenna, pectus, and legs ochreous-brown; tegulae ochreous-brown at base, with a dark brown line and tipped with blackish. Thorax above, crests and patagia blackish peppered with white and with some long brown hairs. Abdomen ochreous-brown above and beneath, the double crest on 1st basal segment rich chocolate-brown.

Fore wing pale ochreous, with the costal area, from base at inner margin gradually narrowing to apex, rich chocolate-brown, shading gradually into the ground-colour; subbasal

line almost lost in the dark costal shade; antemedial line obsolescent, from about one-third along costa, slightly oblique to just before M, where it is strongly angled inward, then oblique to base at inner margin, bordering the dark area; pale area crossed by five or six oblique, undulating, pale brown lines, all strongly angled inwards to behind  $R^1$ , and outwards behind  $R^2$  and  $R^3$ ; distal area from apex to  $R^3$  slightly irrorated with brown; a double, oblique, red-brown subterminal line from  $R^3$  to inner margin, with a dark leaden-grey shade between it and the brown terminal border, upon which there is a row of darker brown dots.

Hind wing with the same colouring; basal half pale, with a dark cell-dot; four or five diffused grey lines on post-medial area, followed by a dark red-brown line and a broad leaden-grey shade, all the lines being straight and nearly parallel to distal margin; terminal area as on lower half of distal margin of fore wing.

Fringes of both wings brown with a pale line at base.

Underside greyish-ochreous, irrorated and strigulated with dark brown. Fore wing with two small brown dots at middle of discocellulars and a slightly crenulate brown post-medial line, slightly excurved round cell and incurved to fold, where it becomes obsolete. Hind wing with a single cell-spot, a crenulate but less curved postmedial line, and a dark subterminal streak at inner margin. Terminal dots and fringes as above.

S.E. Peru: Santo Domingo, 6000 ft., xi. 1904 (*G. Ockendon*), 1 ♀.

A single ♀ of this species in Coll. Brit. Mus., erroneously labelled "Queensland," is placed by Sir George Hampson between *Z. plumbeolinea*, Hmps., and *Z. unilineata*, Grote.

#### MOMINÆ.

##### 19. *Elæodes barnsi*, sp. n. (Pl. III. fig. 7.)

♂.—36 mm.

Head and thorax green (the head tinged with ochreous); palpus predominantly black; pectus and legs white tinged with greenish, the fore tarsus ringed with black; abdomen greyish-white.

Fore wing white, thickly irrorated with green and in parts with blackish, the lines and stigmata white defined on each side by blackish (except a part of the postmedial line, proximally); the subbasal line erect and waved, almost obsolete except behind costa and M; antemedial line from costa at

nearly one-third to near middle of hind margin, nearly oblique to fold, angled in on  $SM^2$  and out to hind margin; orbicular and reniform placed on a black streak, the orbicular triangular, the reniform broadly lunular; postmedial line oblique and slightly waved from costa at two-thirds to  $R^2$ , then inwardly oblique and waved to hind margin at about three-quarters, with the distal dark shading broadened between  $R^3$  and  $M^2$ ; subterminal line a series of white lunules between the veins close to termen, between the radials replaced by a proximal V-shaped mark filled in with black and with an irregular white patch at fold; terminal line almost obsolete; fringe white, proximally chequered with green and distally with black between the veins.

Hind wing white with the veins darkened; a slight blackish spot on  $DC^2$  and diffused subterminal dark shade, obsolescent between  $SC^5$  and  $M^2$ .

Underside of fore wing white tinged costally and distally with greenish; a dark spot on the discocellulars; some dark shading in the cell and between the veins postmedially. Hind wing white, behind costa broadly tinged with greenish and slightly irrorated with blackish; the distal spot larger and stronger than above; a slight postmedial line and diffused subterminal shade from costa to  $R^1$ .

Tanganyika: Niragongo Volcano, Kivu, Sept. 1919 (*T. A. Barns*).

Belongs to Sect. I of Hampson.

Mr. Barns states that this species is much brighter green in nature, but the colour is very fugitive.

## 20. *Elæodes prasinodes*, sp. n.

♂.—36 mm.

Head, thorax, pectus, and legs white mixed with pale green, the tarsi black ringed with white (fore tarsus with one ring, mid-tarsus with two rings, hind tarsus with three rings); abdomen white with the crests on basal segments and patagia at base and tips golden-green.

Fore wing white thickly irrorated basally, medially, and terminally with pale green scales, mixed here and there (especially anteriorly) with pale ochreous, leaving the lines, the base of hind margin, a medial patch behind cell, and a postmedial patch between the radials pure white. A few black scales on base of  $M$ ; subbasal line defined on each side by black at costa and behind  $M$ , bent inward at costa, obsolescent on  $SC$  and behind  $SM^2$ , excurved in fold; ante-medial line mostly defined by black, from one-third costa to

two-fifths hind margin, slightly oblique to behind M, angled out at fold and behind SM<sup>2</sup>; orbicular an orange round spot with three or four black dots on it, ringed by white and, distally, by black; reniform a similar black-dotted orange spot, proximally ringed by white and black, distally lost in the postmedial white patch; cell between the stigmata orange spotted with black; a black streak on fold behind the white medial patch; postmedial line proximally defined by black at costa and behind M, distally from costa to M<sup>2</sup> though only slightly between R<sup>1</sup> and R<sup>3</sup>; from costa at two-thirds, slightly bent outward to R<sup>1</sup>, excurved to R<sup>3</sup>, inwardly oblique to fold, then bent outward and waved to hind margin; three white spots defined by black on costa between postmedial and subterminal lines; subterminal line dentate on the veins, bent outward on SC<sup>5</sup>, defined by black between the radials and slightly defined by orange on posterior half of wing; fringe white, chequered with orange and black between the veins.

Hind wing pure white.

Underside of both wings pure white, with slight green spot on DC<sup>2</sup>; fore wing with costa to near apex yellow-green, leaving a postmedial white dash defined on each side by black; a second black dash on distal side of it; fringe chequered with black.

♀.—38-44 mm.

Marked much as in ♂ or more uniformly green; sometimes with the white or the black markings much reduced. Hind wing with the discal spot visible above and with a more or less developed, curved postmedial line; sometimes also with a subterminal dark shade. Fore wing beneath broadly green on costal and terminal areas, with larger discal spots and traces of the dark postmedial shading behind R<sup>3</sup>.

N.W. Rhodesia, 1919 (*H. C. Dolman*). Type and 1 ♀, also 4 ♀ ♀ from Solwerji, 1917-1918 (*H. C. Dolman*). All in Coll. Brit. Mus.

Belongs to Section ii. of Hampson.

Superficially a good deal resembling *E. barnsi*, but can easily be distinguished by the generally paler colouring of thorax and fore wing, by the white patches behind costa and M (these, however, are absent in some ♀ ♀ of *prasinodes*), by the whiter hind wing and under surface (in ♂), by the shape of the orbicular and colouring of the stigmata, by the tooth on subterminal line behind R<sup>2</sup> and absence of V-shaped angle, as well as by the difference in the antenna.

The larva was figured by Mr. Dolman, with the accom-

panying note:—"This pretty Noctuid larva was first found at Solwerji at the end of 'the rains,' 1917; imagines hatched in early May. Again found during July 1917 and drawn then. The larva is somewhat gregarious, two or three to plant, and adjacent plants usually with their complement too. It feeds on the fronds on the common bracken—"mushilu" (Chikaonde)—and grows with great rapidity. In captivity it pupates in a very slight cocoon made amongst the bracken fronds, the pupa being strikingly coloured. The larva has a number of fine light hairs, sparingly distributed; these do not show in the dorsal aspect. Months found:—iii. . . . vii."

The following description is taken from the drawing:—

The larva is nearly cylindrical, the head and thoracic plate reddish, the rest of the thoracic segments yellow with a fine black dorsal line; the abdominal segments also with a fine black dorsal line, the colouring of the segments otherwise half yellow and half greenish, divided transversely by fine black lines; spiracular lines black, spiracles surrounded by white.

*PLUSIANÆ.*

21. *Plusia anescens*, sp. n. (Pl. IV. fig. 1.)

♂ ♀.—3½ mm.

Head and thorax grey-brown speckled with white, the patagia tipped with white; palpus and antenna brown shaded with black; dorsum of abdomen pale cinereous, with the basal tufts dark brown; body beneath darker cinereous, hair on pectus and tibiæ pale brown, the tarsi brown ringed with white.

Fore wing variegated bronze-gold and dark purplish-brown irrorated with black; subbasal line represented by a silvery streak from costa; antemedial line silvery-white tinged with gold in parts, starting from costa at two-sevenths, distally oblique to SC, deeply incurved and obsolescent to M (behind which there is a slight pale patch), sharply excurved before SM<sup>2</sup> with a pale violet spot in the angle, then inwardly oblique to hind margin; a shining white U-shaped stigma behind the cell, shaped much as in *limbirena*, Gn., but with the lobe separated from the U in the type (in a second specimen, otherwise practically identical, the two marks are united, as in typical *limbirena*, and the lobe is larger); an oblique, crenulate, bronze-gold postmedial shade from fourths costa to fold where it broadens proximally into a



diffused patch extending nearly to antimedial line, then outwardly oblique to hind margin near tornus, where it is edged on each side by a white lunule; subterminal line represented by an irregular row of black and white spots and a few violet specks, nearly parallel with the postmedial shade; a conspicuous round white marginal spot at  $R^3$ , a white marginal streak in fold, and black, slightly pale-edged terminal spots.

Hind wing grey-brown with a cupreous gloss, paler at base, with a pale postmedial line and a fine pale line at base of fringe.

Underside of fore wing and distal and costal areas of hind wing shining grey-brown; a slightly crenulate, dark postmedial line running across both wings from about two-thirds costa of fore wing to near tornus of hind wing; four white dots on costa of fore wing between postmedial line and apex (less clearly visible above). Hind wing with basal inner area paler, shading gradually to grey-brown; a slight brown lunule on  $DC^2$  and a very slight diffused subterminal line.

N. Rhodesia, 1908 (*Gimson*). Type and another ♂.

Also from Escourt, Natal, 1 ♀ in the British Museum.

Near *P. limbirena*, Gn., from which, however, it is easily distinguishable by the following characters. The fore wing is shorter on the apical half, the distal margin being slightly angled at  $R^3$ , instead of evenly curved, as in *limbirena*; the hind wing is more smoky in tone than in *limbirena*, especially on the basal area; the pale marginal mark at  $R^3$  is a slight pinkish streak extending to  $M^1$  in *limbirena*, an almost round white spot in *ænescens*; and the shining bronze-gold shades of *ænescens* are quite absent in *limbirena*, which is also generally less black in its darker shades—altogether less contrasted than *ænescens*.

## 22. *Plusia rubriflabellata*, sp. n. (Pl. IV. fig. 2.)

♂.—30–35 mm.

Head, palpus, and antennal shaft orange-brown, shaded with dark brown; collar with a fan of scarlet scales on either side of head; tegulae, patagia, and thoracic crests purple-brown tipped with white, the crests much as in *chalcytes*, Esp., but that on the mesothorax appearing more produced; third joint of palpus longer and thicker than in *chalcytes*; dorsum of abdomen pale cinereous, the lateral tufts ochreous, springing in a spreading fan from the fifth and sixth abdominal segments and extending nearly to the

anus, which has an ochreous dorsal tuft, at the extreme tip blackish, but without any sign of the black tuft beneath, which is so noticeable in good specimens of *chalcytes*; ventral surface of abdomen a mingling of brown and ochreous scales, darkened on anal segment but without long hair; pectus and legs brown, the tarsi paler.

Fore wing cupreous purple-brown, shot with gleaming bronze-gold, the lines silvery-white, outlined in bronze or brown; subbasal excurved below costa, then undulating, to fold; antemedial excurved to SC, almost obsolete in cell, inwardly oblique from M to hind margin; a white medial spot at about three-fifths costa and traces of an oblique medial line near middle of hind margin; postmedial from about two-thirds costa to hind margin near tornus, strongly undulating, excurved below costa, incurved in cell, angled outward on  $M^1$  and less strongly so on  $M^2$ , angled inward to a deep point (much more strongly so than in *chalcytes*) in fold; subterminal line formed by bronze shading on its proximal side, straight from near apex to about  $SC^5$  between which and  $R^2$  it takes a deep outward curve, then straight to distal margin just behind  $SM^2$ ; black marginal spots between the veins, those behind  $R^2$  and  $R^3$  connected by dark shading; the silvery-white stigma behind middle of cell broken into two closely-approximated, almost round spots; fringe grey with a fine pale line at base, darker at the veins.

Hind wing creamy-white at base, shading into the broad grey-brown distal border; a brown lunule on  $DC^2$  and  $DC^3$ ; traces of a postmedial line a little darker than the border; fringe creamy-white, chequered with brown at the veins on outer half.

Underside of fore wing grey-brown, with a darker postmedial line at about three-fifths and four white costal dots between this and apex; marginal spots indistinct; fringe as above. Hind wing as above, but with the postmedial line marking a sharper division between the pale proximal and dark distal areas and with the addition of a diffused dark subterminal band, its distal edge sharply angled outward on  $R^2$ .

Goodenough Is., 2500-4000 ft., March 1913 (*A. S. Meek*), type and 3 other ♂♂.

Probably nearest to *P. chalcytes*, Esp., but can be at once distinguished by the more purple tone, the straight subterminal and more deeply angled postmedial, and by the larger marginal spots, as well as by the difference in the lateral and anal tufts of abdomen and, especially, by the fans of scarlet scales on collar.

## OPHIDERINÆ.

23. *Hulodes hilaris* (Warr., MS. ?), sp. n. (Pl. IV. fig. 3.)

♂.—75 mm.

Head, tegulæ, pectus, and legs grey-brown; pectus, femora, tibiæ, and first four joints of hind tarsus clothed with long rough hair. Thorax above and abdomen ochreous-grey, the prothorax with bright ochreous band; patagia spotted with black and tipped with grey-brown.

Both wings shaped and marked nearly as in *Hulodes drylla*, Gn., but *hilaris* averages larger and is more ochreous in tone.

Fore wing somewhat heavily irrorated with black; sub-basal and antemedial lines and black orbicular point as in *drylla*; medial bar from costa to reniform blacker; reniform lunule as in *drylla*, but with a conspicuous pale lunule surrounding the lower end of it; postmedial line starting from a black dash on costa at 15 mm., strongly angled outwards to SC<sup>5</sup>, incurved to R<sup>1</sup>, obsolescent to about R<sup>3</sup> where it reappears just proximally to a red-brown, black-mixed, oblique streak from apex, of which it becomes almost a continuation obliquely to two-fifths inner margin, where there is a black spot on distal side of it.

Hind wing marked as in *drylla*, but with the black medial line a little nearer to the body, the diffused shades between postmedial and subterminal lines red-brown (grey in *drylla*), with a broader white shade distally to the subterminal line. Termen red-brown; fringe dark brown from apex to the angle of wing, then pale to tornus.

Underside as in *drylla*, but with the lines a little more strongly marked.

A second ♂ has the red shades more ochreous.

Dutch New Guinea: Wardammen Mts., 3000–4000 ft., November 1914 (A. E. & F. Pratt), type and another ♂.

No doubt the New Guinea representative of *H. drylla*, but can hardly be regarded as a race, on account of the different palpus, the third segment of which in *hilaris* is slightly porrect and half the length of the second, whilst in *drylla* it is upright and less than one-third the length of segment 2.

24. *Platyja retrahens*, sp. n. (Pl. IV. fig. 4.)

♀.—57 mm.

Head, thorax, palpus, fore wing, and abdominal crests reddish-brown; abdomen above, body beneath, and legs grey-brown, tarsi with ends of segments white; hind wing and both wings beneath brown tinged in parts with reddish.

Fore wing with the lines and stigmata a little darker red-brown than the ground-colour; the oblique antemedial line and the subterminal streak from three-fifths costa to termen behind  $R^1$  proximally edged with violet-white; the termen narrowly violet, bordered on each side by fuscous (more broadly proximally); fringe grey-brown with violet lines at base and at middle; orbicular a small round spot; reniform obliquely oblong, a little narrower at middle, with a slight violet-white line on its distal edge; a subterminal line reappearing from the dark terminal suffusion on  $M^2$ , retracted to reniform at about origin of  $M^1$ , thence obliquely waved to two-thirds hind margin; a white dot on violet terminal shade at  $SC^5$  and similar dots proximally to dark suffusion on  $R^2$  to  $M^2$ ; veins darkened and irrorated with violet-white.

Hind wing with veins, terminal area (except at apex) and fringe as on fore wing; small white dots proximally to dark shade on  $R^1$  to  $SM^2$ ; slight dark lunule on  $DC^2$  and  $DC^3$ .

Underside of both wings with a slight dark discal spot and a curved subterminal line, represented by white spots on the veins; terminal area (especially on fore wing) irrorated with some violet scales; fringes as above.

Upper Tonkin: Muong-Khuong, Prov. Lackay, 900-1000 m., 1 ♀.

25. *Batracharta nigritogata*, sp. n. (Pl. IV. fig. 5.)

♂.—43 mm.

Head, thorax, patagia, fore part of pectus, and palpus black, dotted here and there with ochreous-white; a raised ochreous crest on mesothorax; abdomen ochreous above, whitish beneath. Antennal shaft black-brown. Fore and mid tibia black, dotted with white; hind tibia with long ochreous-white hair; tarsi black with white tips to the joints.

Fore wing broadened on distal half by a lobe on inner margin. Ground-colour ochreous. Proximal half of wing heavily cloaked with black, dotted with ochreous (especially near costa) and containing a pale red-brown, irregularly rounded reniform, the black area extending about three-fifths along costa, strongly retracted behind cell and reaching inner margin close to body; distal half of wing of the ground-colour, thickly honeycombed with short, upright, red-brown streaks; distal border pale red-brown, irrorated with black (especially at termen) and extending round the lobe of the inner margin; fringe ochreous-brown.

Hind wing ochreous, clothed with short brown hairs;

veins and terminal line dark brown; fringe paler; the abdominal half of wing with some pale, down-turned, silky hair.

Underside of both wings pale ochreous. Fore wing clouded with grey except for a pale apical patch and slight pale subcostal and terminal borders; costa with alternate pale and dark spots; fringe tipped with brown; a large diffused black spot on discocellulars; some long pale hair in cell. Hind wing with a large, rounded, black-brown spot on discocellulars and slight brown irroration distally to it, between SC<sup>2</sup> and M<sup>2</sup>.

Bidi, Sarawak, 1907-1908 (*C. J. Brooks*).

Somewhat recalls *walkeri*, Beth.-Baker, from New Guinea, and *irrorata*, Hmps., from Sikkim, but is abundantly distinct from both.

26. *Blosyris arpi*, sp. n. (Pl. V. fig. 1.)

♀.—100 mm.

Head, thorax above, and palpus whitish mixed with pale chestnut, a chestnut band just behind the tegulæ; abdomen above pale brown clothed with rough whitish hairs; body beneath ochreous; legs ochreous, the tarsi browner, with pale tip to each joint; a patch of deep black scales at base of mid-tibia on outer side.

Fore wing above violet-whitish, thickly irrorated with chestnut or purplish-brown, especially along basal three-fifths of costa, in an oblique patch at apex, on termen behind R<sup>2</sup>, and between postmedial and subterminal lines from behind M<sup>1</sup> to hind margin. Oblique whitish subbasal and antemedial streaks on costa, defined by dark shading, the lines otherwise almost obsolete, the antemedial reappearing as an inwardly oblique, crenulate, grey streak across fold and a grey mark, further from body, before hind margin; orbicular a very small, elliptical, grey-outlined ring; reniform an elongate circle, outlined in black except on part of terminal edge; three or four outwardly oblique, deep chestnut streaks on costa between ante- and postmedial lines, reappearing as paler chestnut lines before the hind margin; a small white patch on costa between dark area and origin of postmedial line at 29 mm., outwardly oblique and indistinct behind costa, then brown, dentate, distally pale-edged; an ill-defined whitish subterminal line, more clearly visible behind R<sup>3</sup> where it is defined on inner side by the patch before hind margin and on the outer by a diffused ochreous shade; a double, dark brown, crenulate terminal line;

fringe ochreous-brown, darker at the veins, especially  $R^3$  and  $M^1$ .

Hind wing with semihyaline patch on basal costal area, then whitish, thickly irrorated with purplish-brown; a small brown patch on costa between postmedial and subterminal lines and a purplish patch between  $R^3$  and hind margin as on fore wing; purplish streaks across terminal area to the crenulations at  $R^3$  and  $M^1$ ; a slight purple streak also to  $M^2$ ; a broad brown streak, defined on each side by white, across  $DC^2$  and  $DC^3$ ; two or three more or less dentate medial lines, with a purplish shade outside them; a postmedial brown line, outwardly defined by white from costa at 19 mm. to abdominal margin at 18 mm., nearly following the strong crenulations of the termen; double black terminal line and fringe as on the fore wing.

Underside of both wings ochreous-brown, the hind wing a little paler; a black spot at middle of discocellulars on each wing; broad, diffused, blackish terminal and subterminal lines on fore wing behind  $M^2$  and on hind wing; two or three ill-defined medial lines (more distinct on costa of fore wing) and a single row of black spots before margin of both wings.

S. Brazil: Rio Grande do Sul (*Stgr.*); type and two other ♀ ♀, one with the upper surface more ochraceous in tone than the type.

One of these specimens bears the trade name of *Letis arpi*, but, as I cannot trace the name in print, I now publish the species as new.

27. *Serrodes curvilinea*, sp. n. (Pl. V. figs. 2 ♂, 3 ♀.)

♂.—50 mm.

Head, body, legs, and wings brown; fore wing, ternal area of hind wing, and rough hair on dorsum of abdomen and base of hind wing shot with violet.

Fore wing with an outwardly oblique subbasal dash from costa; antemedial line represented by a quadrate brown patch on costa at 5 mm., with a fine brown line (deeply angled outward on M, then inwardly oblique and thickened) connecting it with a broad black-brown patch extending to  $SM^2$ , where it is broader than at M, then a less distinct blackish line excurved to hind margin at 7 mm.; outer half of median area brown (especially towards costa) with the reniform upon it, which is an indistinct pale circle with indications of two or three small pale spots round it; postmedial line deep brown, macular, placed on a broader pale

line, from costa at 13 mm., slightly sinuous and excurved to  $R^3$ , where it forms a rounded angle, inwardly oblique to fold, then slightly excurved to hind margin at 12 mm.; an indistinct row of dark subterminal spots, indicating a dentate line; slight terminal dots between the veins; fringe brown, with pale line at base.

Hind wing nearly unicolorous brown, except for the purple sheen on base, abdominal margin, and tornal area; fringe as on fore wing.

Underside of both wings pale brown, with indications of diffused medial and postmedial lines; fringes a little darker than the ground-colour, with a pale line at base.

♀.—58 mm. Marked as in the ♂, but with the pale reniform circle whiter, more conspicuous, and with more violet irroration on termen of hind wing (from about  $R^1$  to tornus); a slight, distally pale-edged postmedial line on hind wing from about  $R^2$  to near abdominal margin.

Underside darker than in ♂, with the lines slightly more developed.

Sarawak: Bidi, 1907-1908 (C. J. Brooks); type and 1 ♀.

Possibly not a true *Serrododes*, the shape of the wings and non-crenulate margins rather recalling *Athyрма*, from which, however, it is distinguished by the absence of the crest on basal segment of abdomen, the dorsum of abdomen being clothed with rough woolly hair, as in true *Serrododes*. The hair of ♂ hind tibia appears shorter than in typical *Serrododes* (the ♂ is not in perfect condition), but in other respects it seems to agree with that genus.

28. *Rhesalides keiensis*, sp. n. (Pl. V. fig. 4.)

♀.—24 mm.

Head, body, palpus, and legs whitish grey, with some tawny scales; the tarsi shaded with fuscous.

Fore wing greyish-white, tinged with rufous, with a tawny patch on disc and some fuscous subterminal shading; a broad somewhat triangular blackish patch, defined by ochreous, from behind discocellulars to hind margin, interrupted on  $SM^2$ , with its apex on hind margin; blackish subbasal and antemedial spots at costa; orbicular a black spot slightly defined by whitish; reniform tawny, slightly defined by blackish, erect, almost rectangular; postmedial line from a blackish spot at about three-fifths costa, pale, outwardly oblique to before  $M^1$ , then strongly incurved to hind margin at about three-fifths (defining the tawny and

dark patches, with a few proximal dark scales from costa to  $M^1$  expanding to a small diffused patch behind  $R^1$ ); subterminal line indistinct, sinuous, defined by the fuscous shade, incurved about  $SC^2$ ,  $R^2$ , and  $M^2$ , angled outward on  $R^1$ , behind  $R^3$ , and on  $SM^2$ ; a row of dark marginal spots and a slight dark marginal line; fringe imperfect, apparently chequered tawny and brown.

Hind wing whitish, strongly diffused with fuscous-brown, with slight pale postmedial and subterminal lines from about middle of wing to abdominal margin; slight marginal spots and line as on fore wing; fringe whitish chequered with fuscous.

Underside of both wings whitish thickly irrorated with fuscous except at hind margin of fore wing (which is whitish) and on outer two-thirds of costa of fore wing (except at apex) and inner two-thirds of costa of hind wing, which are strongly tinged with deep ochreous; no clearly defined markings except the marginal ones, which are as above.

Kei Is., Dec. 1916–Feb. 1917 (*W. J. C. Frost*), 1 ♀.

Almost certainly a *Rhesalides*, near to *admiraltensis*, Hampsh.; vein 5 of the hind wing is almost from middle of discocellulars (being somewhat aberrant for an Ophiderid species), but in other respects the structure seems to agree perfectly.

#### EXPLANATION OF THE PLATES.

##### PLATE I:

- Fig. 1. *Lophorufa rubrimacula*, sp. n., ♂.  
 Fig. 2. *Lithacodia picatina*, sp. n., ♂.  
 Fig. 3. *Eutelia regalis*, sp. n., ♂.  
 Fig. 4. *Stictoptera plumbeotincta*, sp. n., ♀.  
 Fig. 5. *Blenina brevicosta*, sp. n., ♀.  
 Fig. 6. *Risoba obliqua*, sp. n., ♂.  
 Fig. 7. ——— *philippinensis*, subsp. n., ♀.  
 Fig. 8. ——— *owgarra*, sp. n., ♂.  
 Fig. 9. ———, ♀.  
 Fig. 10. *Hylophilodes pseudorientalis*, sp. n., ♀.  
 Fig. 11. *Carea leucozona*, sp. n., ♀.  
 Fig. 12. *Maceda mansueta rufimacula*, subsp. n., ♀.

##### PLATE II.

- Fig. 1. *Agonista endochrysa*, Prout, ♂.  
 Fig. 2. ———, ♀.  
 Fig. 3. *Achæa ochrocraspeda*, sp. n., ♂.

##### PLATE III.

- Fig. 1. *Achæa ochrocraspeda*, sp. n., ♀.  
 Fig. 2. ——— *joiceyi*, sp. n., ♀.



- Fig. 3. *Parallelia diffusa*, sp. n., ♂.  
 Fig. 4. *Attatha barlowi*, sp. n., ♂.  
 Fig. 5. *Safia hyalina*, sp. n., ♂.  
 Fig. 6. *Zale plumbimargo*, sp. n., ♀.  
 Fig. 7. *Eleodes barusi*, sp. n., ♂.

## PLATE IV.

- Fig. 1. *Plusia cenesceus*, sp. n., ♂.  
 Fig. 2. — *rubriflabellata*, sp. n., ♂.  
 Fig. 3. *Holodes hilaris*, sp. n., ♂.  
 Fig. 4. *Platyja retrahens*, sp. n., ♀.  
 Fig. 5. *Batracharta nigrilogata*, sp. n., ♂.

## PLATE V.

- Fig. 1. *Blosyris arpi*, sp. n., ♀.  
 Fig. 2. *Serrodes curvilinea*, sp. n., ♂.  
 Fig. 3. — — —, ♀.  
 Fig. 4. *Rhesalides keiensis*, sp. n., ♀.

## PLATE VI.

- Fig. 1. *Arcte papuensis*, Warr.  
 Fig. 2. *Cocytodes caerulea*, Gn.  
 Fig. 3. — *maura*, Holl.  
 Fig. 4. *Achæa ablutaris*, Gn.

## PLATE VII.

- Fig. 1. *Mimophisma delunaris*, Gn.  
 Fig. 2. *Parallelia conjunctura*, Walk.  
 Fig. 3. — *diffusa*, sp. n.  
 Fig. 4. — *humilis*, Holl.  
 Fig. 5. — *isotima*, Prout.

II.—*Odonata collected in New Caledonia by the late  
 Mr. Paul D. Montague.* By HERBERT CAMPION.

[Plates VIII. & IX.]

DESCRIPTIONS of a few of the Dragonflies occurring in New Caledonia and the adjacent Loyalty Islands may be found scattered through the writings of Father Montrouzier (1864), Brauer (1865), De Selys (1871, 1877, and 1885), and McLachlan (1886). In 1915 a special paper on "Libellen (Odonata) von Neu-Caledonien und den Loyalty-Inseln" was published by Dr. F. Ris in 'Sarasin and Roux, Nova Caledonia,' Zool. ii. The collection upon which that paper was based contained 14 species, 5 of which were brought forward as new, whilst 6 more species known to